Fig. 1

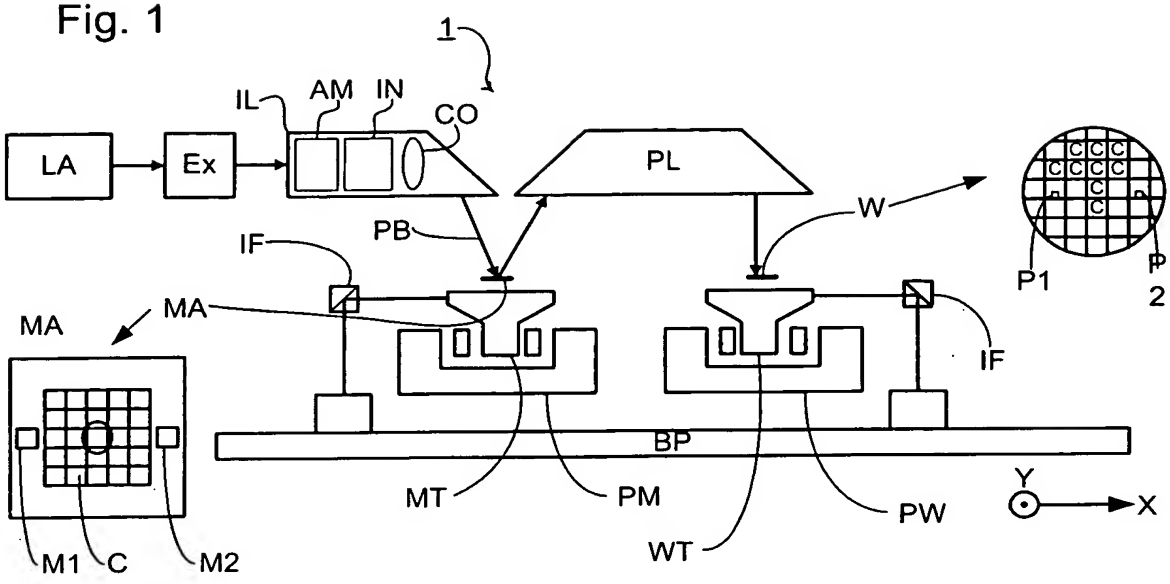
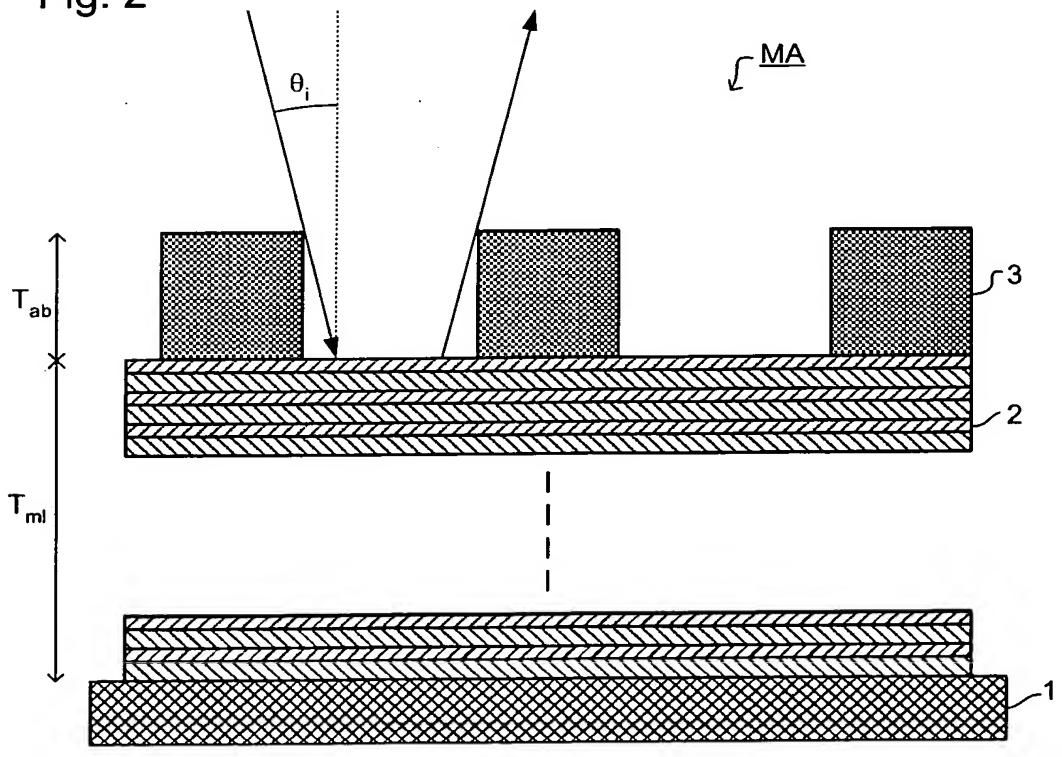


Fig. 2



P-0393

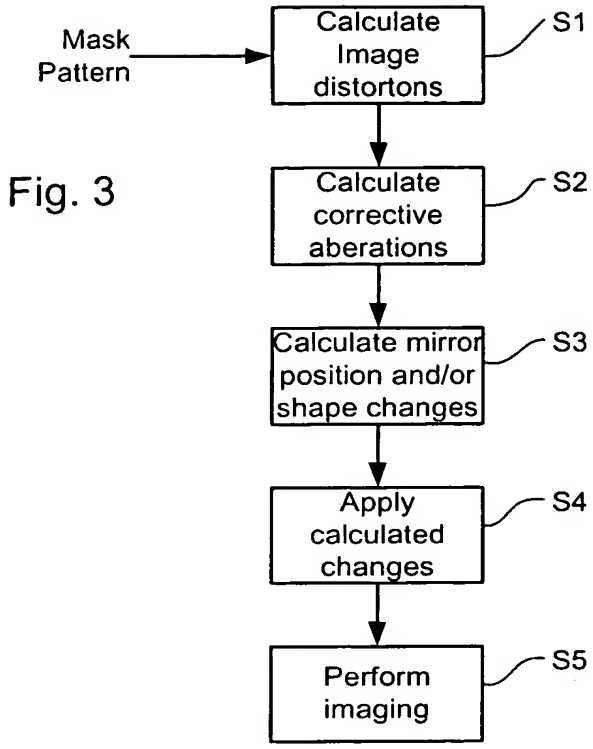

Mask Pattern
Calculate Image distortons
S1
Calculate corrective aberations
S2
Calculate mirror position and/or shape changes
S3
Apply calculated changes
S4
Perform imaging
S5

Fig. 3

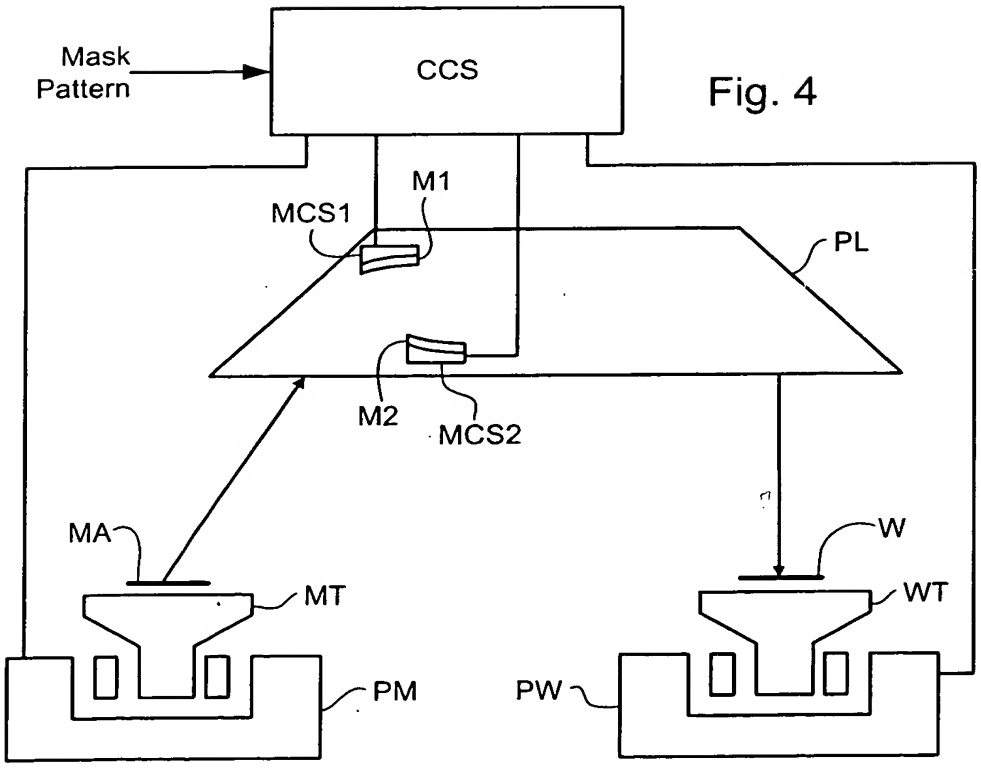

Mask Pattern
CCS
M1
MCS1
PL
M2
MCS2
MA
MT
PM
W
WT
PW

Fig. 4

Fig. 5

Addition of aberration to correct for BFshift due to mask :
starting position - 30nm Bright Field

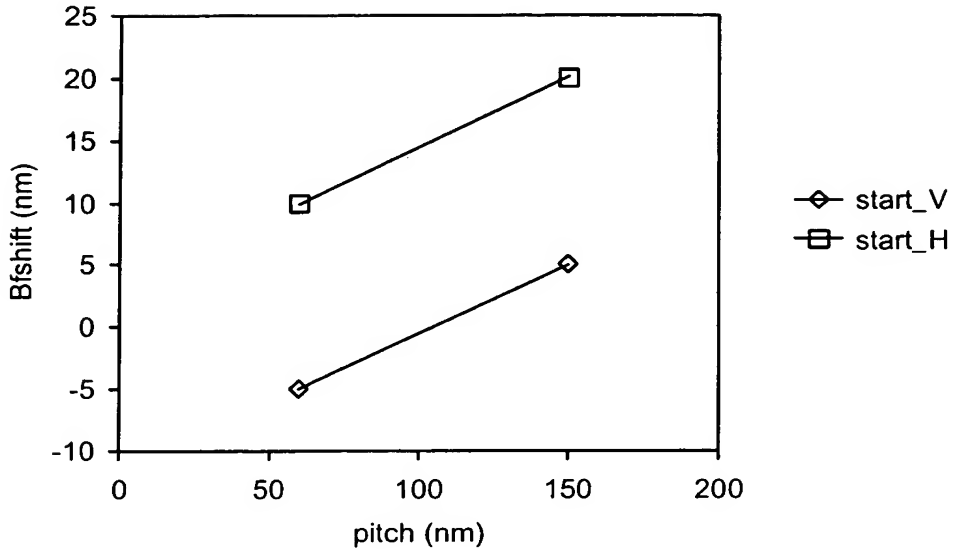
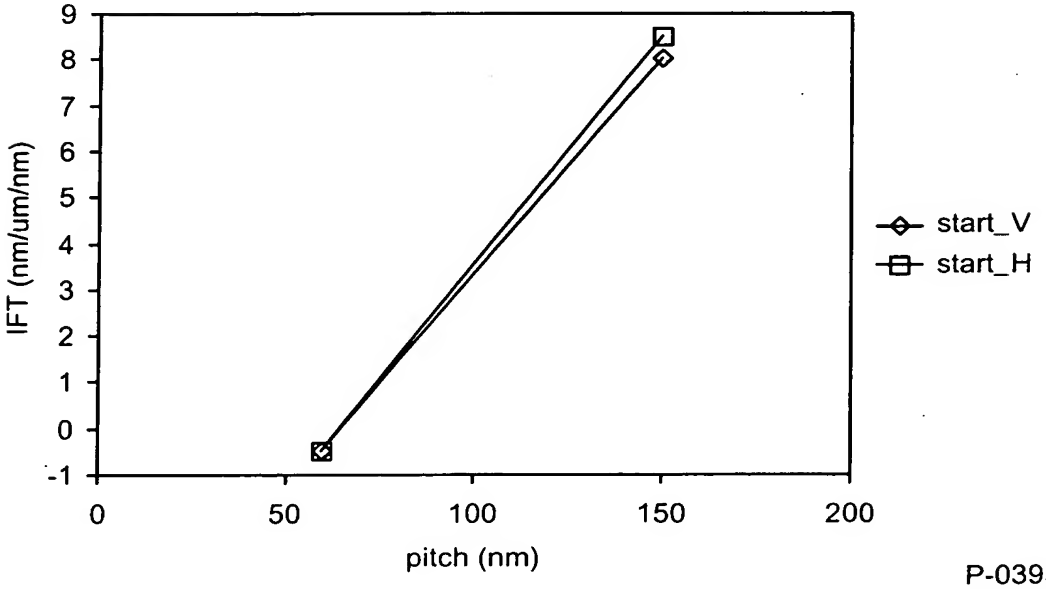


Fig. 6

Effect of BFshift correction on IFT :
starting position - 30nm Bright Field



P-0393

Fig. 7

Addition of aberration to correct for BFshift due to mask :
Z5-0.26nm and Z9-0.24nm and Z12-0.07nm -30nm Bright Field

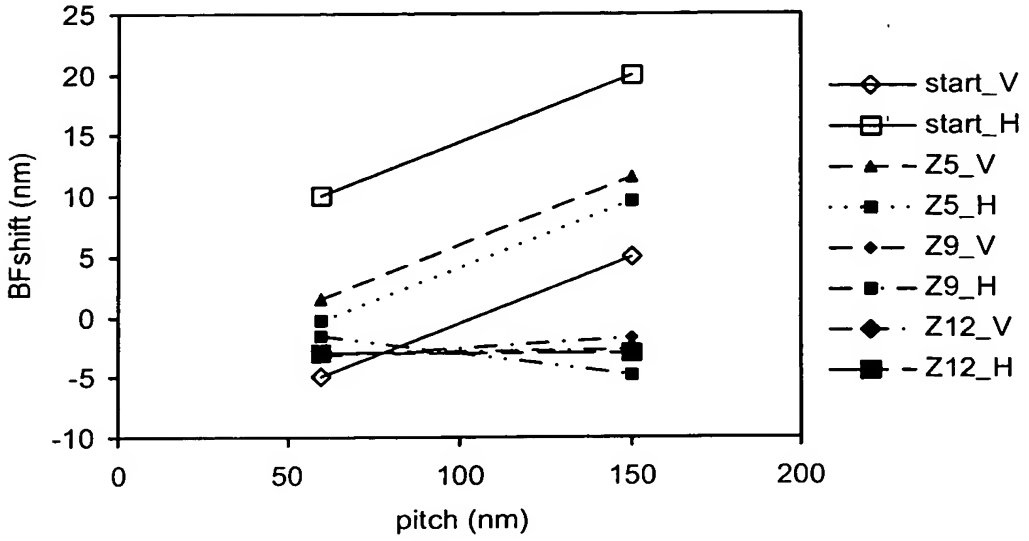


Fig. 8

Effect of BFshift correction on IFT :
Z5-0.26nm and Z9-0.24nm and Z12-0.07nm - 30nm Bright Field

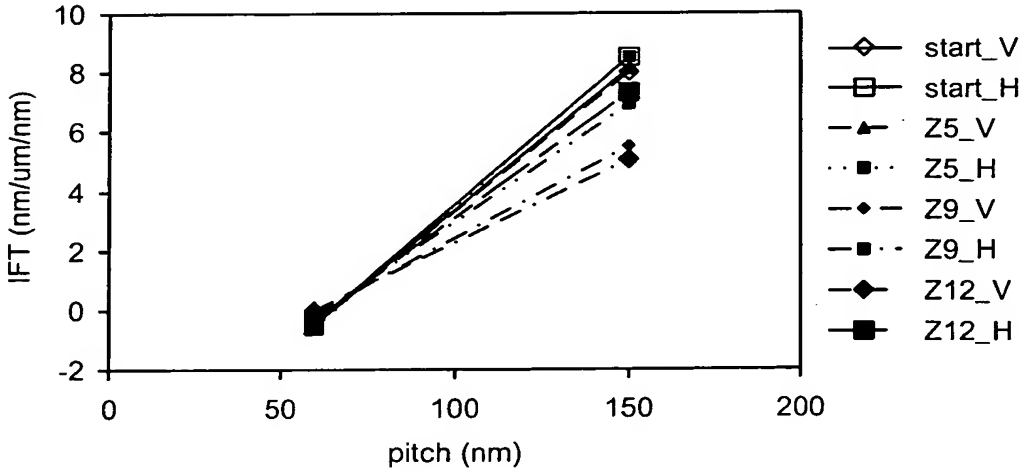


Fig. 9

Addition of aberration to correct for BFshift due to mask :
Z5-0.18nm and Z9-0.22 and Z12-0.18nm - 50nm Bright Field

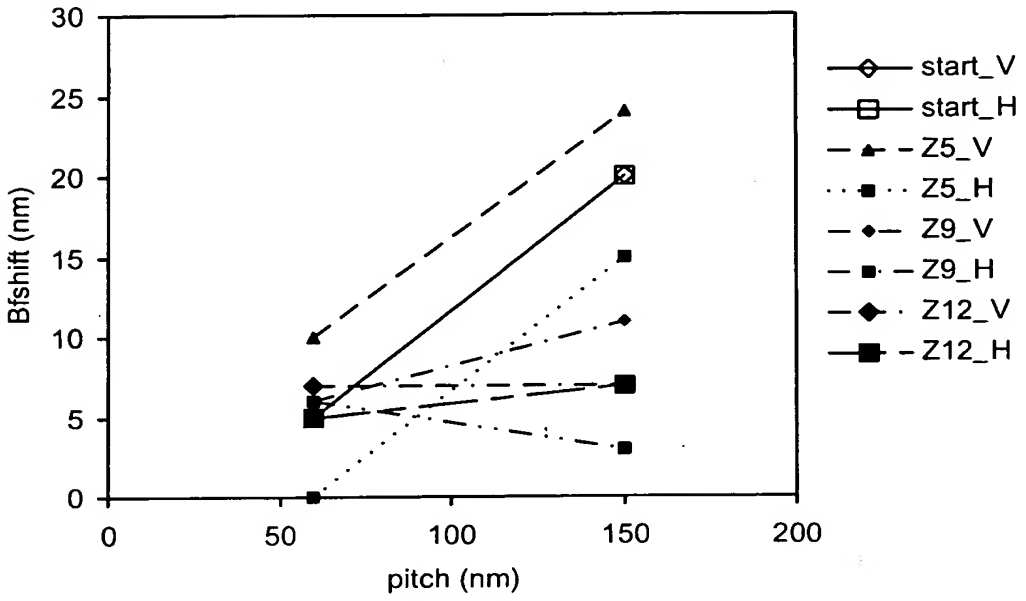


Fig. 10

Correction of IFT without impact on BFshifts :
Z5-0.4nm and Z9-0.55nm and Z12-0.11nm - 30nm Bright Field

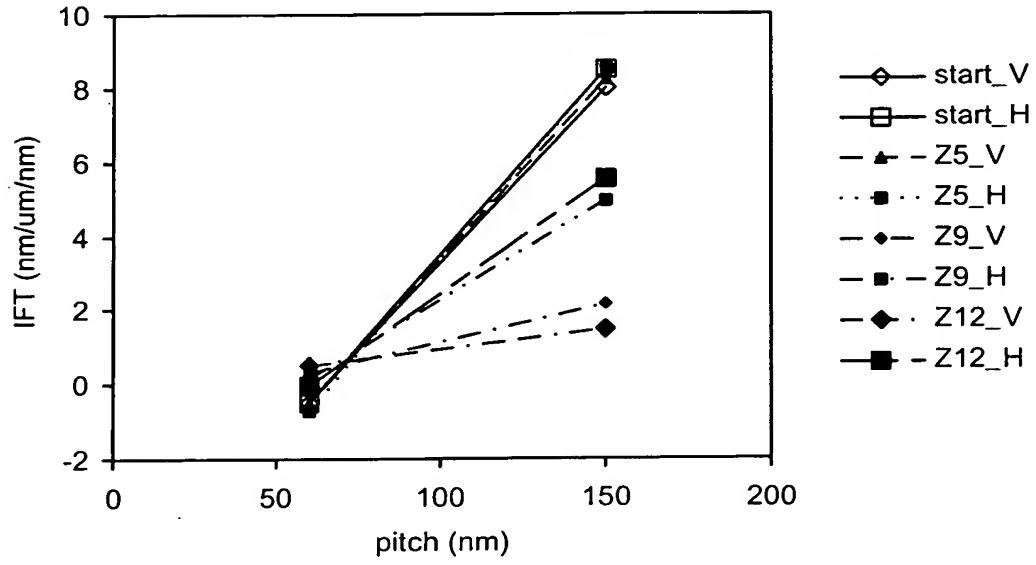


Fig. 11

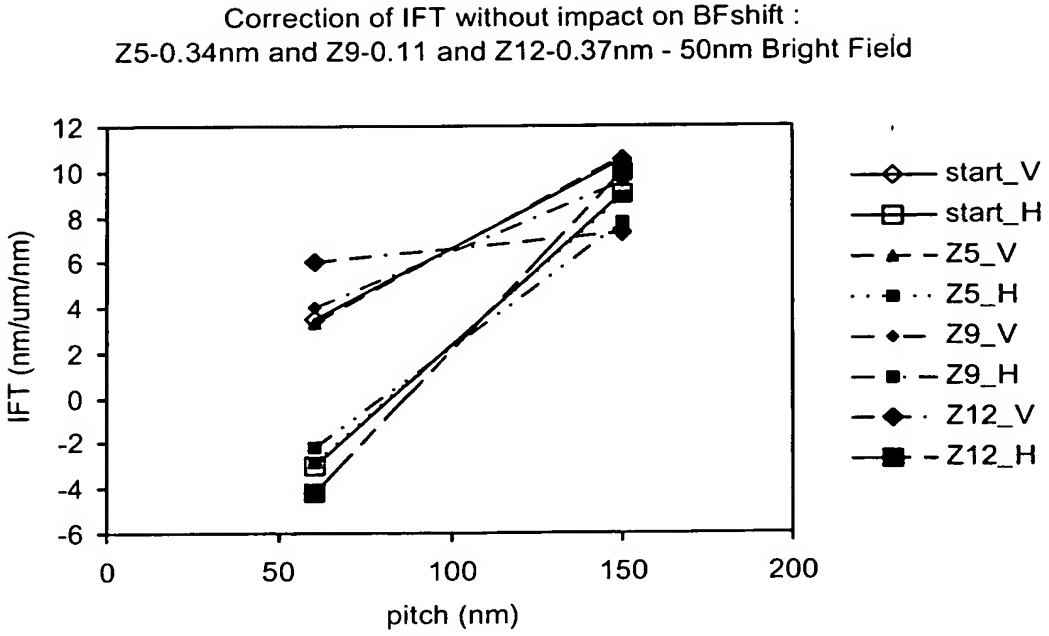

Correction of IFT without impact on BFshift :
Z5-0.34nm and Z9-0.11 and Z12-0.37nm - 50nm Bright Field
IFT (nm/um/nm)
12
10
8
6
4
2
0
-2
-4
-6
0
50
100
150
200
pitch (nm)
start_V
start_H
Z5_V
Z5_H
Z9_V
Z9_H
Z12_V
Z12_H

Fig. 12

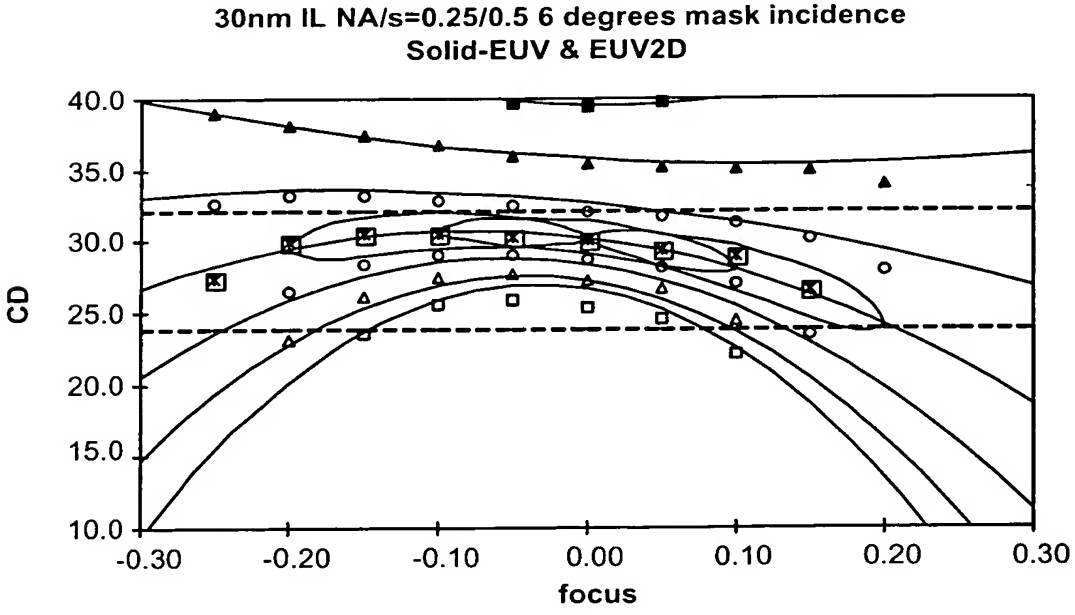

30nm IL NA/s=0.25/0.5 6 degrees mask incidence
Solid-EUV & EUV2D
CD
40.0
35.0
30.0
25.0
20.0
15.0
10.0
-0.30
-0.20
-0.10
0.00
0.10
0.20
0.30
focus

Fig. 13

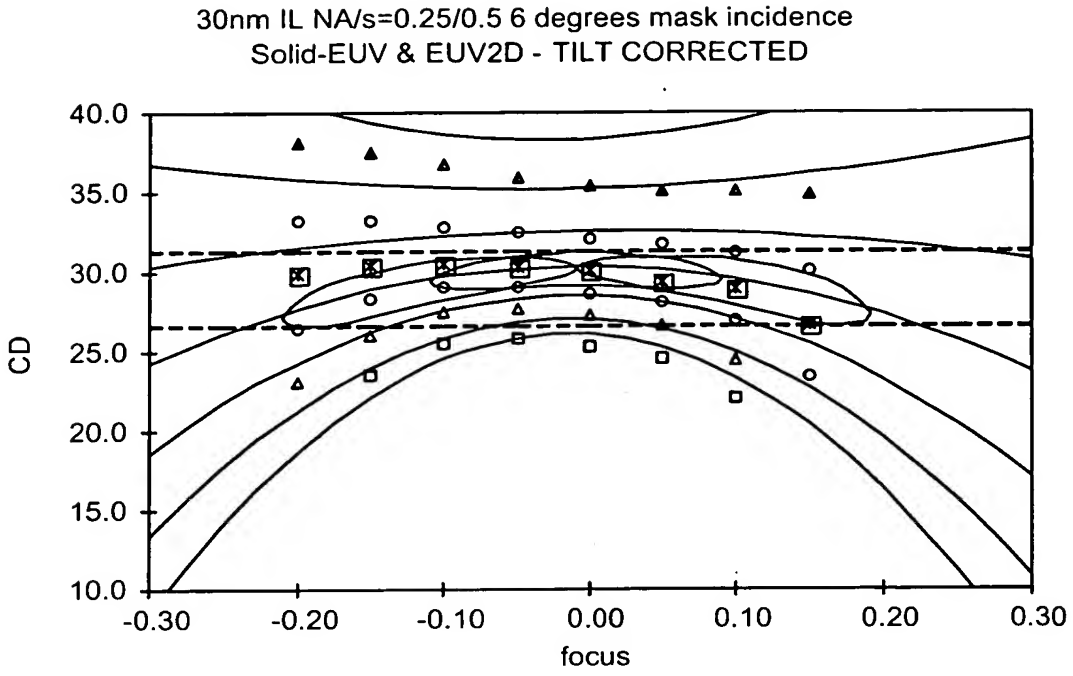

30nm IL NA/s=0.25/0.5 6 degrees mask incidence
Solid-EUV & EUV2D - TILT CORRECTED
CD
40.0
35.0
30.0
25.0
20.0
15.0
10.0
-0.30
-0.20
-0.10
0.00
0.10
0.20
0.30
focus

Fig. 14

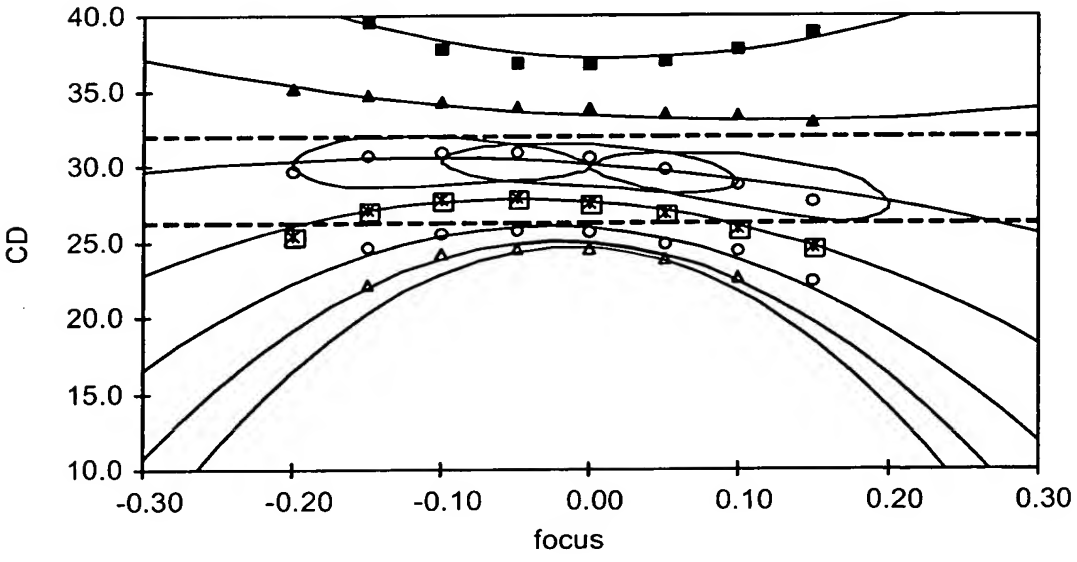

30nm IL NA/s=0.25/0.5 0 degrees mask incidence
Solid-EUV & EUV2D
CD
40.0
35.0
30.0
25.0
20.0
15.0
10.0
-0.30
-0.20
-0.10
0.00
0.10
0.20
0.30
focus

Fig. 15

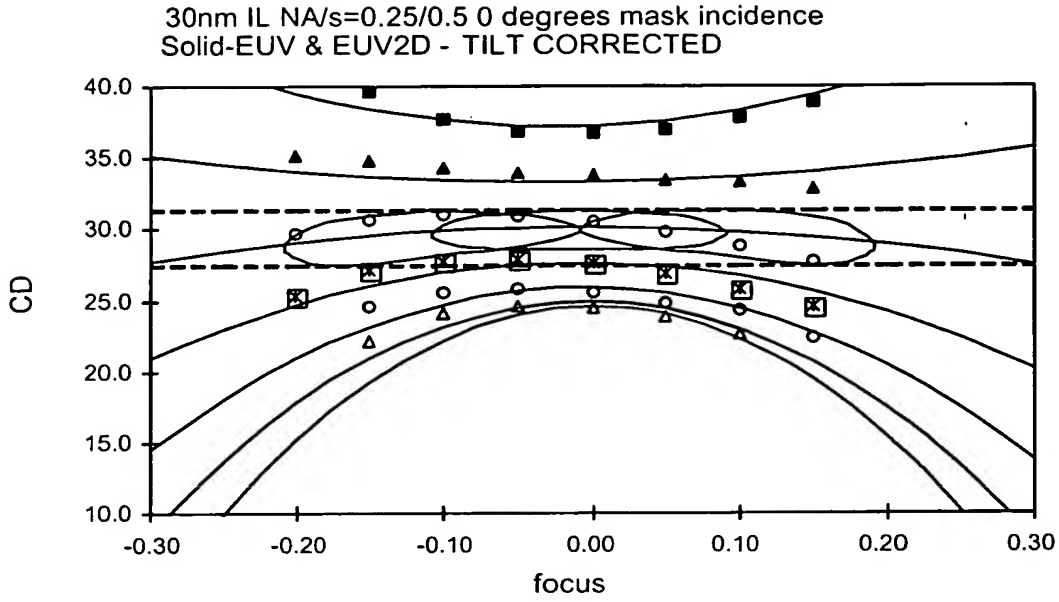

30nm IL NA/s=0.25/0.5 0 degrees mask incidence
Solid-EUV & EUV2D - TILT CORRECTED
CD
40.0
35.0
30.0
25.0
20.0
15.0
10.0
-0.30
-0.20
-0.10
0.00
0.10
0.20
0.30
focus

Fig. 16

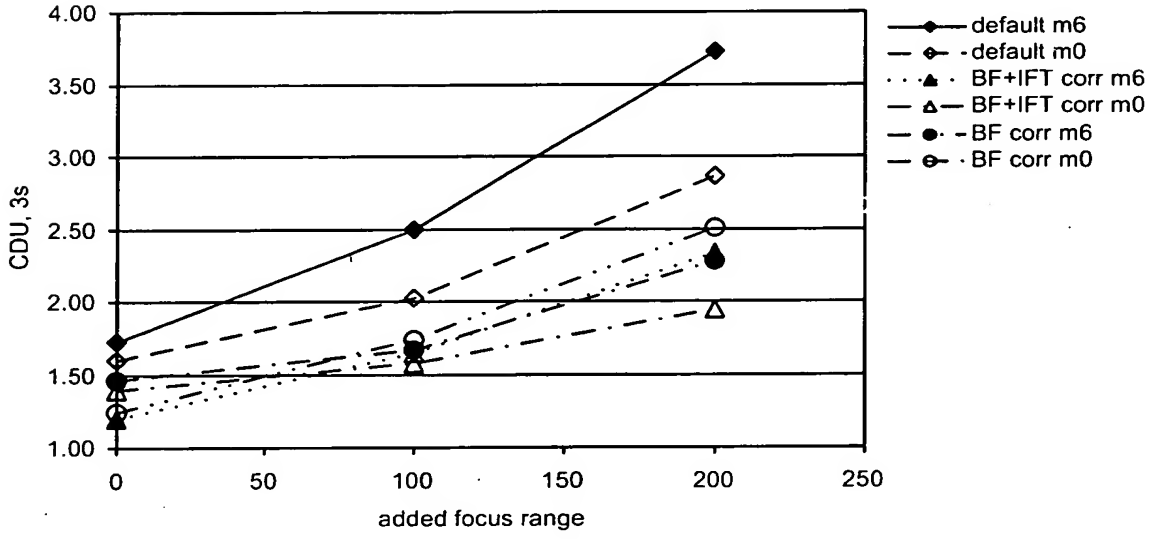

CDU, 3s
4.00
3.50
3.00
2.50
2.00
1.50
1.00
0
50
100
150
200
250
added focus range
default m6
default m0
BF+IFT corr m6
BF+IFT corr m0
BF corr m6
BF corr m0

Fig. 17

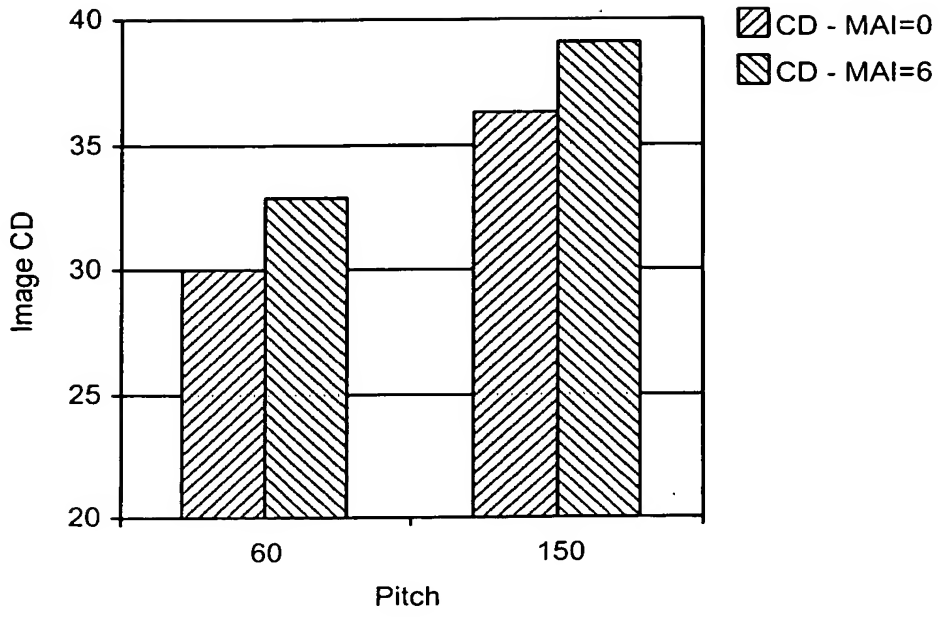

40
35
30
25
20
Image CD
60
150
Pitch
CD - MAI=0
CD - MAI=6

Fig. 18

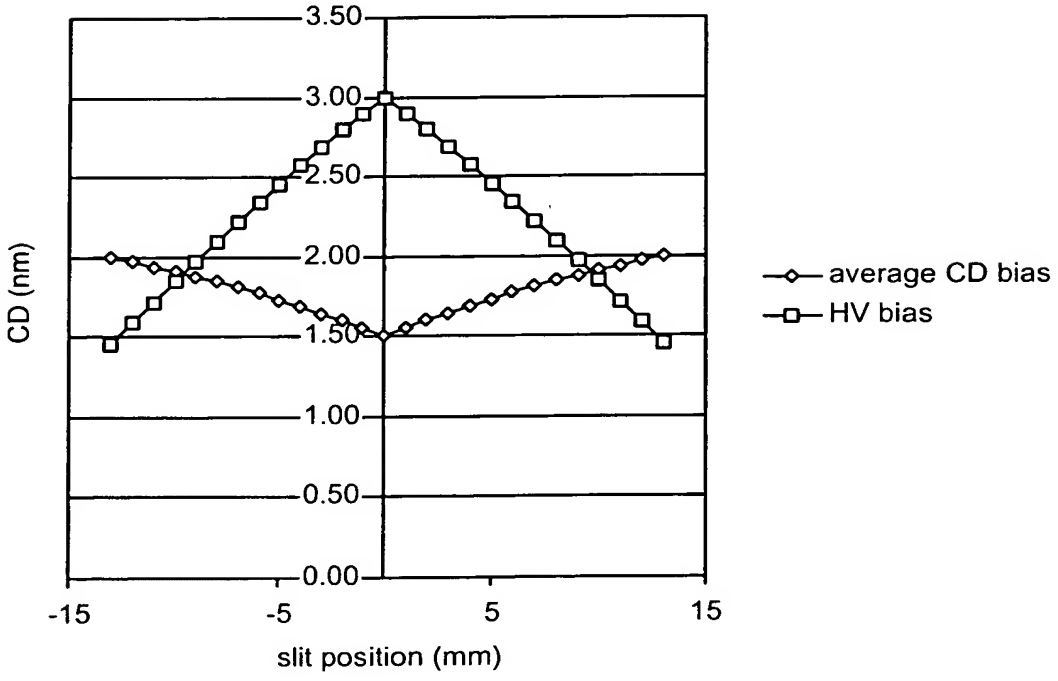

3.50
3.00
2.50
2.00
1.50
1.00
0.50
0.00
CD (nm)
-15
-5
5
15
slit position (mm)
average CD bias
HV bias

Fig. 19

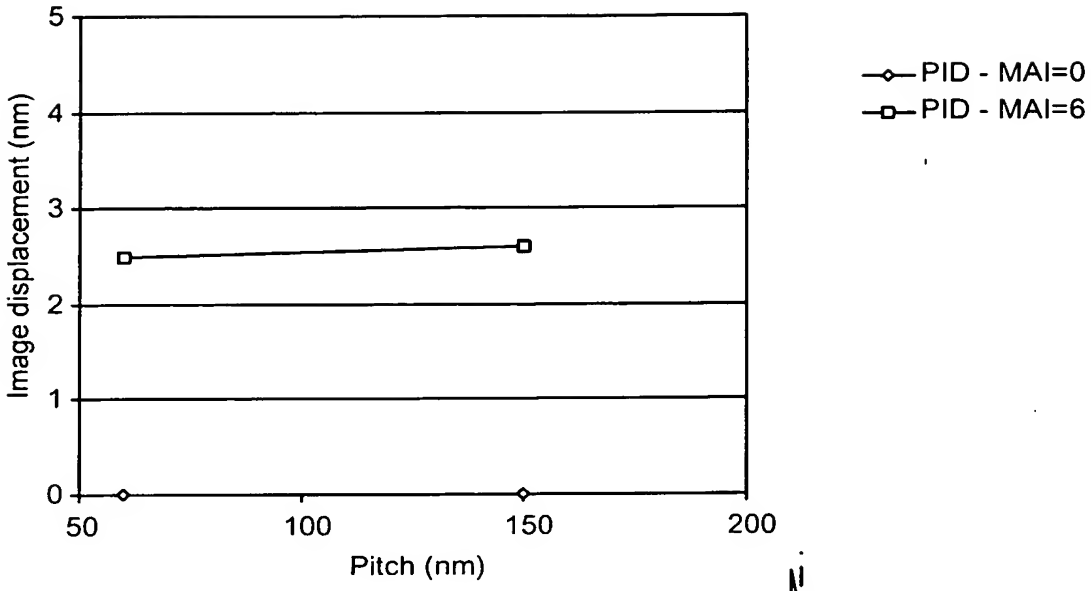


Fig. 20

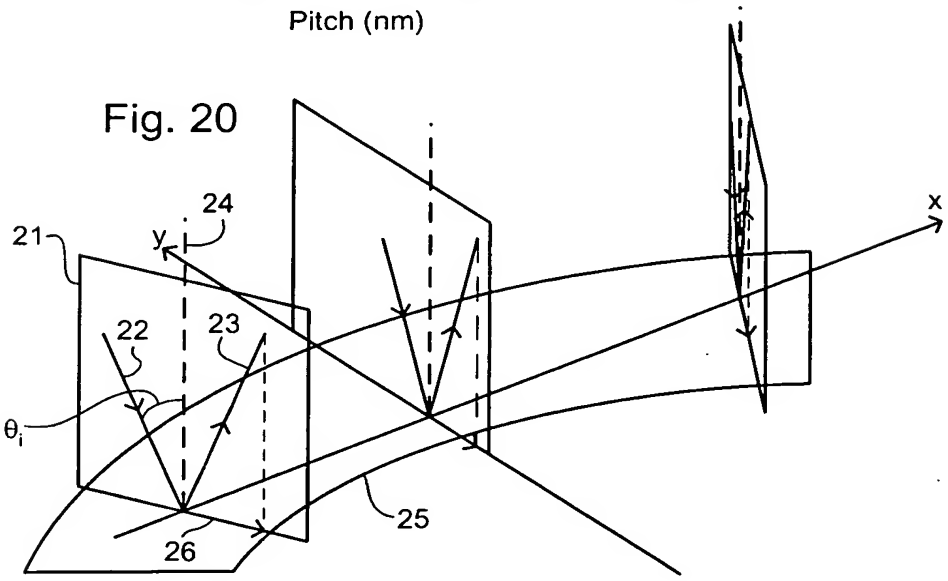


Fig. 21

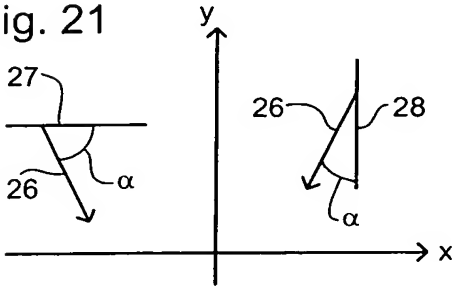
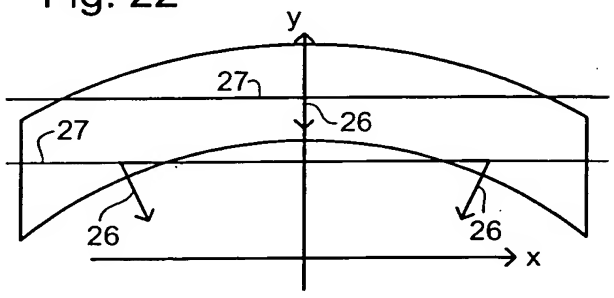


Fig. 22



P-0393